

November 5, 2002

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Set	Items	Description
S1	510	PHASE(2N)CONJUGAT?
S2	17415853	PROBE? OR PROBING OR INTERROGAT? OR EXPLOR? OR INVESTIGAT? OR INSPECT? OR PENETRAT? OR PROD?
S3	583802	BEAM? OR LASER? OR LIGHT(2N)(PULS? OR MODULAT?) OR MASER? - OR QUANTUM(2N)ELECTRONIC? OR OPTICAL(2N)(PUMP? OR GENERAT? OR MODULAT? OR OSCILLATOR?) OR IRASER? OR QUANTUM()GENERATOR?
S4	711	INTRACAVIT? OR INTRA()CAVIT?
S5	53598	S2(3N)S3
S6	30	S5(S)S1
S7	25	RD (unique items)
S8	0	S1(S)S2(S)S3(S)S4

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7/3,K/1 (Item 1 from file: 16)  
DIALOG(R)File 16:GALE GROUP PROMT(R)  
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02706816 Supplier Number: 43616314  
**Phase-conjugating mirror improves laser beam**  
Laser Focus World, p29  
Feb, 1993  
Language: English Record Type: Abstract  
Document Type: Magazine/Journal; Trade

ABSTRACT:

Thomson-CSF (France), researchers are developing an enhanced Nd:YAG laser via a **phase - conjugating** mirror. Scientists at the company's Central Research Laboratory (Orsay, France), are using **phase conjugation** via stimulated Brillouin scattering to improve the output beam to provide nearly diffraction-limited divergence...

...a low-energy Nd:YAG master oscillator and a Nd:YAG power amplifier with a **phase - conjugating** end mirror and a **beam** deflector. It **produces** pulses with energies of 100-185 mJ that have twice-diffraction-limited divergence and with...

7/3,K/2 (Item 1 from file: 160)  
DIALOG(R)File 160:Gale Group PROMT(R)  
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01752265  
**science/scope: Using new technologies, an advanced solid-state laser prototype**  
Aviation Week & Space Technology August 24, 1987 p. 7  
ISSN: 0005-2175

Using new technologies, an advanced solid-state **laser** prototype has been **produced** that is more efficient and more readily scaled from low to high power than currently available models. The Hughes-built prototype uses optical **phase conjugation**, ensuring that all light waves emitted are in phase, compensating for aberrations and distortions in...

7/3,K/3 (Item 2 from file: 160)  
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01173113  
**Laser enters twilight zone.**  
ELECTRONICSWEEK February 18, 1985 p. 33,34

**Phase - conjugate** optics is a new type of laser-related field that makes filmless holograms and corrects distortion. By shinning lasers into certain materials, a new **laser beam** is **produced**--an exact replica rather than a common mirror image. The return beam has 2 unique features, denoting **phase conjugation**. It returns the laser source at the same angle and in traveling in the reverse...

... time reversal process is compared to making a film-strip run backwards. By replacing previous **phase - conjugate** mirrors--made with liquid carbon disulfide or silicon tetrafluoride vapor--with the crystal barium titanate  
...

7/3,K/4 (Item 3 from file: 160)  
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00900434

**UK: Three laser labs are conducting research on development and utilization of rare-gas-halide excimer lasers.**

Laser Focus March, 1983 p. 38,40

... of stimulated Raman scattering having recently been completed. A study is also underway on the **phase conjugation** of RGH lasers. Rutherford Appleton Lab is exploring the exploitation of excimer **lasers** for the **production** of plasmas. Article details research efforts at each of the 3 institutions. ...

7/3,K/5 (Item 4 from file: 160)

DIALOG(R)File 160:Gale Group PROMT(R)

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00818330

**A self-starting phase conjugator that requires no external mirrors and no external pump beams has been demonstrated at the U of S California.**

Laser Focus September, 1982 p. 10

... and directed back toward the incident beam. The fan beam then interferes with the incident **beam**, **producing** the **phase conjugate** signal beam by a 4-wave mixing process. ...

7/3,K/6 (Item 1 from file: 148)

DIALOG(R)File 148:Gale Group Trade & Industry DB

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07200790 SUPPLIER NUMBER: 15232006 (USE FORMAT 7 OR 9 FOR FULL TEXT)

**Coherent introducing new high-performance pulsed YAG. (Coherent Inc. Laser Products Div.; Nd:YAG laser) (Photonics Technology World)**

Moss, Tuckerman

Photonics Spectra, v28, n2, p24(1)

Feb, 1994

ISSN: 0731-1230 LANGUAGE: ENGLISH RECORD TYPE: FULLTEXT

WORD COUNT: 335 LINE COUNT: 00026

... holds the key

The key to this new laser's high beam quality is a **phase conjugate** mirror. The mirror corrects thermally induced wave-front aberrations introduced by the gain media through...

...s this combination of performance and user friendliness that will drive the success of this **product** ." The **laser** -head package size is approximately 1 m (L) X 1.5 m (W); the power...

7/3,K/7 (Item 2 from file: 148)

DIALOG(R)File 148:Gale Group Trade & Industry DB

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06440001 SUPPLIER NUMBER: 13700223 (USE FORMAT 7 OR 9 FOR FULL TEXT)

**Tunable solid-state lasers for spectroscopy. (includes related article on alexandrite lasers) (Lasers)**

Moody, Stephen E.; Guyer, Dean R.; Bosenberg, Walter R.; Jones, Patrick L. Lasers & Optronics, v12, n3, p15(4)

March, 1993

ISSN: 0892-9947 LANGUAGE: ENGLISH RECORD TYPE: FULLTEXT; ABSTRACT

WORD COUNT: 3258 LINE COUNT: 00269

... a single laser source to generate a phase grating in a medium from which a **probe beam** from the same source may be scattered. The

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advantages include the **phase conjugate** nature of the signal beam and that, in the infrared, the narrow solid angle of...

7/3,K/8 (Item 3 from file: 148)

DIALOG(R)File 148:Gale Group Trade & Industry DB  
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06432757 SUPPLIER NUMBER: 13689558 (USE FORMAT 7 OR 9 FOR FULL TEXT)  
**Fullerenes meet photonics. (utilization of buckminsterfullerenes in optical devices) (includes related article) (Photonics in Chemistry) (Cover Story)**  
Kafafi, Zakya H.  
Photonics Spectra, v27, n3, p76(3)  
March, 1993  
DOCUMENT TYPE: Cover Story ISSN: 0731-1230 LANGUAGE: ENGLISH  
RECORD TYPE: FULLTEXT  
WORD COUNT: 1524 LINE COUNT: 00128

... produced. In the counterpropagating geometry, the signal beam  
|I.sub.4  
is generated as a **phase conjugate** of the **probe beam** |I.sub.3  
. An example of an important application for NLO processes where  
optical phase...

7/3,K/9 (Item 4 from file: 148)

DIALOG(R)File 148:Gale Group Trade & Industry DB  
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06390467 SUPPLIER NUMBER: 13406315 (USE FORMAT 7 OR 9 FOR FULL TEXT)  
**Advanced optical materials will spark new applications. (Photonics Global Forecast) (Cover Story)**  
Truett, William L.  
Photonics Spectra, v27, n1, p109(2)  
Jan, 1993  
DOCUMENT TYPE: Cover Story ISSN: 0731-1230 LANGUAGE: ENGLISH  
RECORD TYPE: FULLTEXT  
WORD COUNT: 993 LINE COUNT: 00079

... As[Se.sub.3], MNA (2-nitroaniline) rutile:GGG and SrBaNb[O.sub.3].  
For **phase conjugation**, SrBaNb[O.sub.3] with Ce doping is commercially  
available. For **optical parametric oscillator investigations**, a series  
of LiNb[O.sub.3] compositions doped with Er, Fe, Li, Te, MgO...

7/3,K/10 (Item 1 from file: 636)

DIALOG(R)File 636:Gale Group Newsletter DB(TM)  
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02999474 Supplier Number: 46117431 (USE FORMAT 7 FOR FULLTEXT)  
**OPTOELECTRONICS:Phase-Conjugate Mirror Removes Distortions**  
Optical Materials & Engineering News, v6, n6, pN/A  
Feb 1, 1996  
Language: English Record Type: Fulltext  
Document Type: Newsletter; Trade  
Word Count: 574

**Phase - conjugate** mirrors could be used to prevent the degradation  
of a laser beam amplified to higher power in multiple laser stages. Each  
stage can introduce aberrations into the beam. **Phase - conjugate** mirrors  
can help users obtain high-power laser beams of diffraction-limited  
quality. One proposed...

...laser system for an earth-observing satellite. This instrument will  
include compact, efficient, solid- state **lasers** that will **produce**

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pulses of 20-250 millijoules lasting 0.1-50.0 nanoseconds. Multistage power amplification, with...

...as high as 60% were achieved.

In the experiment, the cross-sectional area of a **phase - conjugate beam produced** by photorefractive four-wave mixing was compared with that of the return from a conventional mirror after passing through the aberrating medium. The **phase - conjugate** beam was returned with a cross-sectional area equal to that of the unaberrated beam...

7/3,K/11 (Item 2 from file: 636)  
DIALOG(R)File 636:Gale Group Newsletter DB(TM)  
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01075265 Supplier Number: 40675386 (USE FORMAT 7 FOR FULLTEXT)  
**The Naval Research Laboratory**  
SDI Monitor, v4, n3, pN/A  
Feb 6, 1989  
Language: English Record Type: Fulltext  
Document Type: Magazine/Journal; Trade  
Word Count: 114

(USE FORMAT 7 FOR FULLTEXT)  
TEXT:  
The Naval Research Laboratory wants to **investigate** Raman **beam** clean-up and **phase conjugation** .

7/3,K/12 (Item 3 from file: 636)  
DIALOG(R)File 636:Gale Group Newsletter DB(TM)  
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01071441 Supplier Number: 40661151 (USE FORMAT 7 FOR FULLTEXT)  
**NRL TO INVESTIGATE RAMAN BEAM CLEANUP**  
SDI Intelligence Report, v5, n3, pN/A  
Jan 31, 1989  
Language: English Record Type: Fulltext  
Document Type: Magazine/Journal; Trade  
Word Count: 126

(USE FORMAT 7 FOR FULLTEXT)  
TEXT:  
The Naval Research Laboratory (NRL) plans an **investigation** of Raman **beam** cleanup and **phase conjugation** . Tasks include the following:

7/3,K/13 (Item 4 from file: 636)  
DIALOG(R)File 636:Gale Group Newsletter DB(TM)  
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01070950 Supplier Number: 40660148 (USE FORMAT 7 FOR FULLTEXT)  
**Raman Beam Clean-Up.**  
Navy News & Undersea Technology, v6, n4, pN/A  
Jan 30, 1989  
Language: English Record Type: Fulltext  
Document Type: Newsletter; Trade  
Word Count: 96

(USE FORMAT 7 FOR FULLTEXT)  
TEXT:  
...Naval Research Laboratory needs a contractor to perform the following tasks in conjunction with the **investigation** of Raman **beam** clean-up and **phase conjugation** : characterize the operation of Karl Subscale Laser under injection locked conditions; operate the laser in conjunction with

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the Raman beam clean-up experiments; conduct experiments on Raman beam clean-up, **phase conjugation** to investigate wavefront preservation in Raman amplifier. Respond by Feb. 25. For information call Pat...

7/3,K/14 (Item 5 from file: 636)

DIALOG(R)File 636:Gale Group Newsletter DB(TM)  
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01070937 Supplier Number: 40660112 (USE FORMAT 7 FOR FULLTEXT)

**UNTITLED ARTICLE**

Military Space, pN/A

Jan 30, 1989

Language: English Record Type: Fulltext

Document Type: Newsletter; Trade

Word Count: 75

(USE FORMAT 7 FOR FULLTEXT)

TEXT:

Naval Research Laboratory wants to **investigate** Raman **beam** clean-up and **phase conjugation** .

7/3,K/15 (Item 1 from file: 88)

DIALOG(R)File 88:Gale Group Business A.R.T.S.  
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05519899 SUPPLIER NUMBER: 64698561

**Edge-enhanced correlation with four-wave mixing in bismuth silicon oxide crystal by use of moving gratings.**

Wang, Zhaoqi; Guan, JiuHong; Liang, Baolai; Mu, Guoguang

Applied Optics, 39, 23, 4112

August 10, 2000

ISSN: 0003-6935 LANGUAGE: English RECORD TYPE: Abstract

AUTHOR ABSTRACT: The nonlinearity of **phase - conjugate** beam reflection with four-wave mixing in bismuth silicon oxide crystal by use of moving gratings at large fringe modulation formed by the incident- **beam** ratio is **investigated** . On the basis of this investigation, the edge enhancement of an object and the edge...

7/3,K/16 (Item 2 from file: 88)

DIALOG(R)File 88:Gale Group Business A.R.T.S.  
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05407057 SUPPLIER NUMBER: 62193243

**Experimental investigation of saturated degenerate four-wave mixing for quantitative concentration measurements. (Statistical Data Included)**

Reichardt, Thomas A.; Giancola, William C.; Shappert, Christopher M.;

Lucht, Robert P.

Applied Optics, 38, 33, 6951(11)

Nov 20, 1999

DOCUMENT TYPE: Statistical Data Included ISSN: 0003-6935

LANGUAGE: English RECORD TYPE: Abstract

...AUTHOR ABSTRACT: of equivalence ratios. We use both low (perturbative) and high (saturating) beam intensities in the **phase - conjugate** geometry. Resonances in the A (super 2)(SIGMA)(super +) -X (super 2)II (0,0) band of OH are **probed** with multiaxial-mode **laser** radiation. The effects of saturation on the line-center signal intensity and the resonance linewidth ...

...polarization dependence of the P(sub 1)(2) and R(sub 2)(1) resonances is **investigated** in both **laser** intensity regimes. There is a significant

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change in relative reflectivities for different polarization configurations when...

7/3,K/17 (Item 3 from file: 88)  
DIALOG(R)File 88:Gale Group Business A.R.T.S.  
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04564416 SUPPLIER NUMBER: 19956618  
**Variable stimulated Brillouin scattering pulse compressor for nonlinear optical measurements.**

Klovekorn, Patrick; Munch, Jesper  
Applied Optics, v36, n24, p5913(5)  
August 20, 1997

ISSN: 0003-6935 LANGUAGE: English RECORD TYPE: Abstract

...AUTHOR ABSTRACT: the transient response of third-order optical nonlinearities using degenerate four-wave mixing and a **phase - conjugated** laser system. Variable compression of **laser** pulses allows selective **probing** of a material for thermal effects and faster nonlinearities such as electronic or reorientational effects...

...organometallic liquid crystal. Key words: Stimulated Brillouin scattering, pulse compression, four-wave mixing, platinum ethynyl, **phase conjugation** .

7/3,K/18 (Item 4 from file: 88)  
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03896801 SUPPLIER NUMBER: 18298449  
**Dynamic laser control using feedback from a gain grating.**

Green, Russel P.M.; Crofts, Graham J.; Hubbard, Wendy; Udaiyan, Darren;  
Kim, Dong Hwan; Damzen, Michael J.  
IEEE Journal of Quantum Electronics, v32, n3, p371(7)  
March, 1996

ISSN: 0018-9197 LANGUAGE: English RECORD TYPE: Abstract

...ABSTRACT: produces single-frequency locking and passive Q-switching of the cavity. The linear cavity exhibits **phase - conjugate** properties and produces a Laguerre-Gaussian like mode despite the broken azimuthal symmetry of the cavity. A Nd:YAG **laser** system with feedback **produces** a 20 nanosecond pulse at 1.064 micrometers.

7/3,K/19 (Item 5 from file: 88)  
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03658601 SUPPLIER NUMBER: 17240669  
**100-watt average output power 1.2 diffraction limited beam from pulsed neodymium single-rod amplifier with SBS phase conjugation. (stimulated Brillouin scattering)**

Eichler, Hans J.; Haase, Andreas; Menzel, Ralf  
IEEE Journal of Quantum Electronics, v31, n7, p1265(5)  
July, 1995

ISSN: 0018-9197 LANGUAGE: English RECORD TYPE: Abstract

...ABSTRACT: state master oscillator-amplifier-laser having minimum elements for a double pass single rod amplifier **produced pulsed light** with limited diffraction of 100 watt average output power. This system has a repetition rate...

...3 kilohertz and a pulsewidth of 70 nanoseconds. It has a total

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efficiency including the **phase conjugator** of 1.25 percent.

7/3,K/20 (Item 6 from file: 88)  
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03437485 SUPPLIER NUMBER: 14786654  
**Researchers try to build time machines for microwaves. (machines that return microwave images as they were received)**  
Glanz, James  
Science, v263, n5145, p321(2)  
Jan 21, 1994  
ISSN: 0036-8075 LANGUAGE: English RECORD TYPE: Fulltext; Abstract  
WORD COUNT: 1766 LINE COUNT: 00145

... planes, thereby "brightening" the targets seen by the radar system by orders of magnitude.

Microwave **phase conjugation** could also be a key to visionary schemes for collecting solar energy in space, then...

...microwave beams. To target the intense microwaves precisely, the ground station would send up a **probe beam**; the solar collector would respond with a vastly more powerful **phase - conjugated** beam. Without **phase conjugation**'s pinpoint accuracy, says physicist Norman Rostoker of the University of California, Irvine, who has...

7/3,K/21 (Item 7 from file: 88)  
DIALOG(R)File 88:Gale Group Business A.R.T.S.  
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03371628 SUPPLIER NUMBER: 16427850  
**Three-beam conjugation and mode competition in BaTiO3.**  
Zhang, Chun-ping; Song, Q. Wang; Corderro, Dave  
Journal of Applied Physics, v76, n6, p3926(3)  
Sept 15, 1994  
ISSN: 0021-8979 LANGUAGE: English RECORD TYPE: Abstract

ABSTRACT: BaTiO3 crystals with three beams, a new type configuration of **phase conjugation** (PC), are **produced** by using three **laser** beams. Two incident beams are capable of generating self-pumped PC and mutually pumped PC...

7/3,K/22 (Item 8 from file: 88)  
DIALOG(R)File 88:Gale Group Business A.R.T.S.  
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03171724 SUPPLIER NUMBER: 13572164  
**Boundary layer profiles in plasma chemical vapor deposition.**  
Green, David S.; Owano, Thomas G.; Williams, Skip; Goodwin, David G.; Zare, Richard N.; Kruger, Charles H.  
Science, v259, n5102, p1726(4)  
March 19, 1993  
ISSN: 0036-8075 LANGUAGE: English RECORD TYPE: Fulltext; Abstract  
WORD COUNT: 2557 LINE COUNT: 00210

... Boltzmann distribution[10, 13].

The experimental setup for our DFWM experiment is known as the **phase conjugate** geometry[1, 2]. The laser source is a conventional neodymium:yttrium-aluminum-garnet pumped dye...

...intensities in excess of saturation). Both the forward pump beam [I.sub.f] and the **probe beam** [I.sub.p] are vertically polarized, while

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the backward pump beam [I.sub.b] is...

...mu]m. The conjugate beam [I.sub.c], the DFWM signal, is extracted from the **probe beam** path with a 1:1 beam splitter, passed through a linear polarizer and spatial filter...

7/3,K/23 (Item 9 from file: 88)  
DIALOG(R)File 88:Gale Group Business A.R.T.S.  
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03063025 SUPPLIER NUMBER: 14420165  
**A high efficiency double 45 degree-cut mutually pumped phase conjugate mirror.**

Zhiguo Zhang; Yong Zhu; Changxi Yang; Panming Fu  
Journal of Applied Physics, v74, n3, p2137(3)  
August 1, 1993  
ISSN: 0021-8979 LANGUAGE: English RECORD TYPE: Abstract

...ABSTRACT: to the alignment of two incident beams in a double 45 degree-cut, mutually pumped **phase conjugate** mirror, with high **phase conjugate** reflectives, is examined. The angle between the incident beams can be varied from 7 degrees to 140 degrees, and more than 60% conjugate reflectivity to obtain two mutually incoherent incident **beams**, which **produce** their own **phase conjugate** outputs. The competition from the self-pumped **phase conjugation** can be avoided because of the stable conjugate outputs.

7/3,K/24 (Item 10 from file: 88)  
DIALOG(R)File 88:Gale Group Business A.R.T.S.  
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02940470 SUPPLIER NUMBER: 12671884  
**Detection of trace molecular species using degenerate four-wave mixing.**  
**(Instrumentation) (Cover Story)**

Farrow, Roger L.; Rakestraw, David J.  
Science, v257, n5078, p1894(7)  
Sept 25, 1992  
CODEN: SCIEAS DOCUMENT TYPE: Cover Story ISSN: 0036-8075  
LANGUAGE: English RECORD TYPE: Fulltext; Abstract  
WORD COUNT: 4274 LINE COUNT: 00412

... intensity with a computer. At this point a beam splitter is used to produce the **probe** and forward pump **beams**, which are crossed at a small angle (typically 1 [degrees] to 4 [degrees]) and intersect in the medium to be studied. A second beam splitter placed in the **probe beam** path is used to extract the **phase conjugate** signal. The signal beam is directed to a convenient detection location often several meters away...are (most nearly) resonant with all three beams contribute effectively to the signal. In the **phase - conjugate** geometry, only molecules with near-zero velocity along the beam propagation direction simultaneously interact with the counterpropagating pump **beams** and the **probe beam** for small angles of [theta], giving rise to a sub-Doppler linewidth. Analytic expressions for the **phase - conjugate** line shape have been derived in the limit of low laser intensity [7]. We have...

7/3,K/25 (Item 11 from file: 88)  
DIALOG(R)File 88:Gale Group Business A.R.T.S.  
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01506256 SUPPLIER NUMBER: 02900311  
**Conjugate bliss. (mirror optics)**  
Scientific American, v249, p88(1)

November 5, 2002

Sep, 1983

CODEN: SLAMA

ISSN: 0036-8733

LANGUAGE: English

RECORD TYPE:

Fulltext

WORD COUNT: 469

LINE COUNT: 00046

... exposed to light; phase-conjugate mirrors might make the process more precise.

A system of **phase - conjugate** optics being developed by Amnon Yariv and his colleagues at Cal Tech is intended to...

...by eliminating the requirement that laser beams make two-way trips, one to reach a **phase - conjugate** mirror and one to return. In their arrangement a "**probe beam**" and an "information beam" travel in opposite directions. The **probe beam** leaves the receiving station of a communications link and travels toward the broadcasting station, becoming distorted on the way. On its arrival at the broadcasting station it affects a **phase - conjugate** device, so that the device can give the information beam a distortion complementary to the one the **probe beam** has undergone. The information beam can then take flight in a predistorted form. The distorting...

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File 16:GALE GROUP PROMT(R) 1990-2002/NOV 6  
(c) 2002 THE GALE GROUP  
File 160:Gale Group PROMT(R) 1972-1989  
(c) 1999 The Gale Group  
File 148:Gale Group Trade & Industry DB 1976-2002/Nov 05  
(c)2002 The Gale Group  
File 621:Gale Group New Prod.Annou.(R) 1985-2002/Nov 04  
(c) 2002 The Gale Group  
File 636:Gale Group Newsletter DB(TM) 1987-2002/Nov 05  
(c) 2002 The Gale Group  
File 88:Gale Group Business A.R.T.S. 1976-2002/Nov 04  
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File 570:Gale Group MARS(R) 1984-2002/Nov 05  
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Set	Items	Description
S1	510	PHASE(2N)CONJUGAT?
S2	17415853	PROBE? OR PROBING OR INTERROGAT? OR EXPLOR? OR INVESTIGAT? OR INSPECT? OR PENETRAT? OR PROD?
S3	583802	BEAM? OR LASER? OR LIGHT(2N)(PULS? OR MODULAT?) OR MASER? - OR QUANTUM(2N)ELECTRONIC? OR OPTICAL(2N)(PUMP? OR GENERAT? OR MODULAT? OR OSCILLATOR?) OR IRASER? OR QUANTUM()GENERATOR?
S4	711	INTRACAVIT? OR INTRA()CAVIT?
S5	53598	S2(3N)S3
S6	30	S5(S)S1
S7	25	RD (unique items)
S8	0	S1(S)S2(S)S3(S)S4